The Impact of Immigration on the Labour Market Outcomes of Native-born Canadians

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Introduction

- 2.4 million immigrants, 1990-2000
  (= 70% of the Canadian population growth)

- Immigrants account for 18% of the total population (2001 Census)

- Canadian economic research focus on immigrant integration

- Lack of studies on the effect of immigration

Question of Interest

- **What is the impact of immigrant inflows on the native-born Canadians' labour market outcomes (wages)?**

- Theoretically ambiguous:
  - Immigration => labour supply↑ => wage↓
  - Immigrant consumption => demand for goods and services↑=> labour demand↑=> wage↑

An Empirical Question to Study

- The effect of immigration on natives' wages is then an empirical question

- A number of U.S., Australian and European studies:
  - Area Approach: little effect

    Card (1990), Butcher & Card (1991), Lalonde & Topel (1991), Ottaviano & Peri (2006) and Bonin (2005)
  - Skill Approach: large negative effects

    Borjas, Freeman & Katz (1992, 1996) and Borjas (2003)

- Little Canadian literature: negative impact

  Aydemir & Borjas (2006)

Theoretical Framework

- Divide the Canadian labour market into sub-markets by areas (cities, provinces) and skill types (education, occupation)
- Assume immigrants enter and affect each sub-market independently*.
- Regress changes in native wages on the changes in immigrant shares of a sub-market

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**check for native migration by Card and DiNardo's (2000) method.*

Two-Stage Regressions

- *Step 1*. Regress native log weekly wages on skill-area dummies for each census, controlling for effects of socio-economic characteristics

$$(1) \qquad \log W = \beta X + \theta(SKILL \cdot AREA) + \varepsilon$$

  - $\log W_{it}$ = native log weekly wage
  - X = age, sex, marital status, visible minority
  - θ*'s* are average wages of each skill-area group adjusted for effects of the X variables

Two-Stage Regressions

- *Step 2.* Calculate the intercensal differences in the adjusted mean wages (θ), and regress them on the change in immigrant to native ratio (M/N)

$$(2) \quad \Delta\hat{\theta} = \gamma\Delta\,(M/N) + \eta\Delta Y + SKILL + AREA + u$$

  - (M/N) = the ratio of immigrants (M) to natives (N) in a skill-area group
  - Y = demand side factors (unemployment rate)

Data

- The 1991, 1996 and 2001 Canadian Census Public Use Microdata File (PUMF)

  (3% sample of the population)

  - paid workers aged 16 to 65
  - full time (30+ hours/week)
  - full year (50+ weeks/year)

Socio-Economic Characteristics about Immigrants and Natives

- Immigrants are :
  - older
  - more educated (substantial rise)
  - more likely to be married
  - more likely to cluster in Toronto & Vancouver
  - less likely to live in a non-CMA

Table 1. Statistical Summary of Natives and Immigrants: 1991, 1996, 2001 Censuses

	1991		1996		2001	
	Natives	Immigrants	Natives	Immigrants	Natives	Immigrants
Log weekly wage	6.35	6.35	6.35	6.31	6.36	6.31
Average Age	37.8	42.22	39.22	42.67	39.8	43.25
Male	0.59	0.59	0.58	0.58	0.57	0.56
Married	0.71	0.77	0.71	0.76	0.69	0.75
CMA						
Montreal	0.13	0.1	0.12	0.1	0.12	0.1
Toronto	0.12	0.4	0.12	0.4	0.11	0.42
Vancouver	0.05	0.1	0.05	0.11	0.05	0.12
Other CMAs	0.32	0.26	0.32	0.26	0.33	0.25
Non-CMA	0.38	0.13	0.39	0.13	0.38	0.1
Educational Attainment						
Less than high school	0.24	0.27	0.2	0.22	0.18	0.2
High school diploma	0.33	0.27	0.31	0.25	0.3	0.25
Certificate	0.27	0.26	0.3	0.28	0.32	0.28
University	0.16	0.21	0.2	0.25	0.2	0.28

Variables to Categorize Sub-Markets

- Area variables:
  - Census metropolitan area (CMA) (19)
  - Province (10)

- Skill variables:
  - Educational Attainment (4)
  - Occupation (14)

Figure 3. Changes in Adjusted Mean Log Weekly Wages ($\Delta\theta$) of Natives against $\Delta(M/N)$ over Education-CMA Groups for 1991-1996 and 1996-2001 Intervals

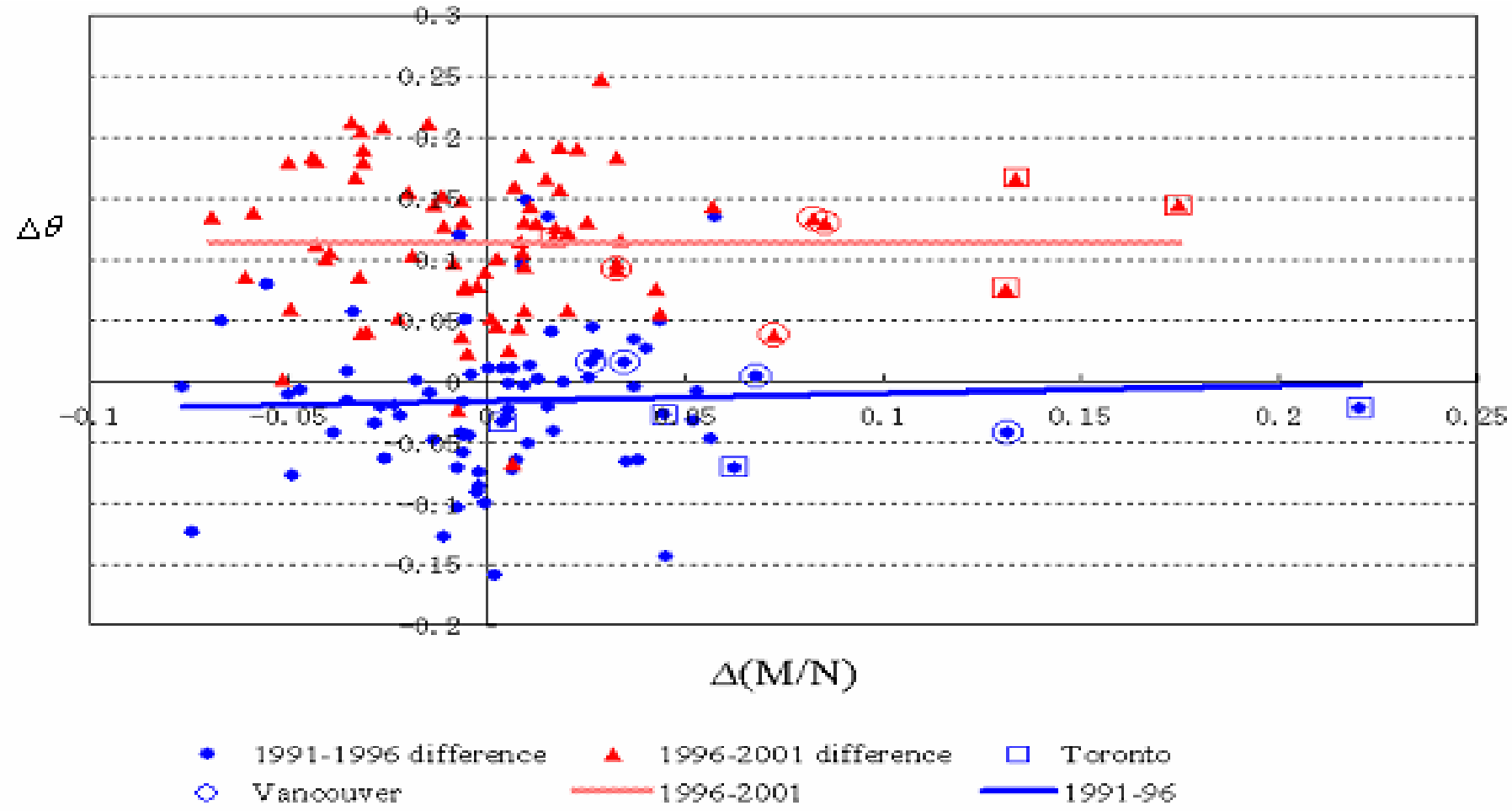

Figure 4. Changes in Adjusted Mean Log Weekly Wages ($\Delta\theta$) of Natives against $\Delta(M/N)$ over Education-CMA Groups for 1991 - 2001 Interval

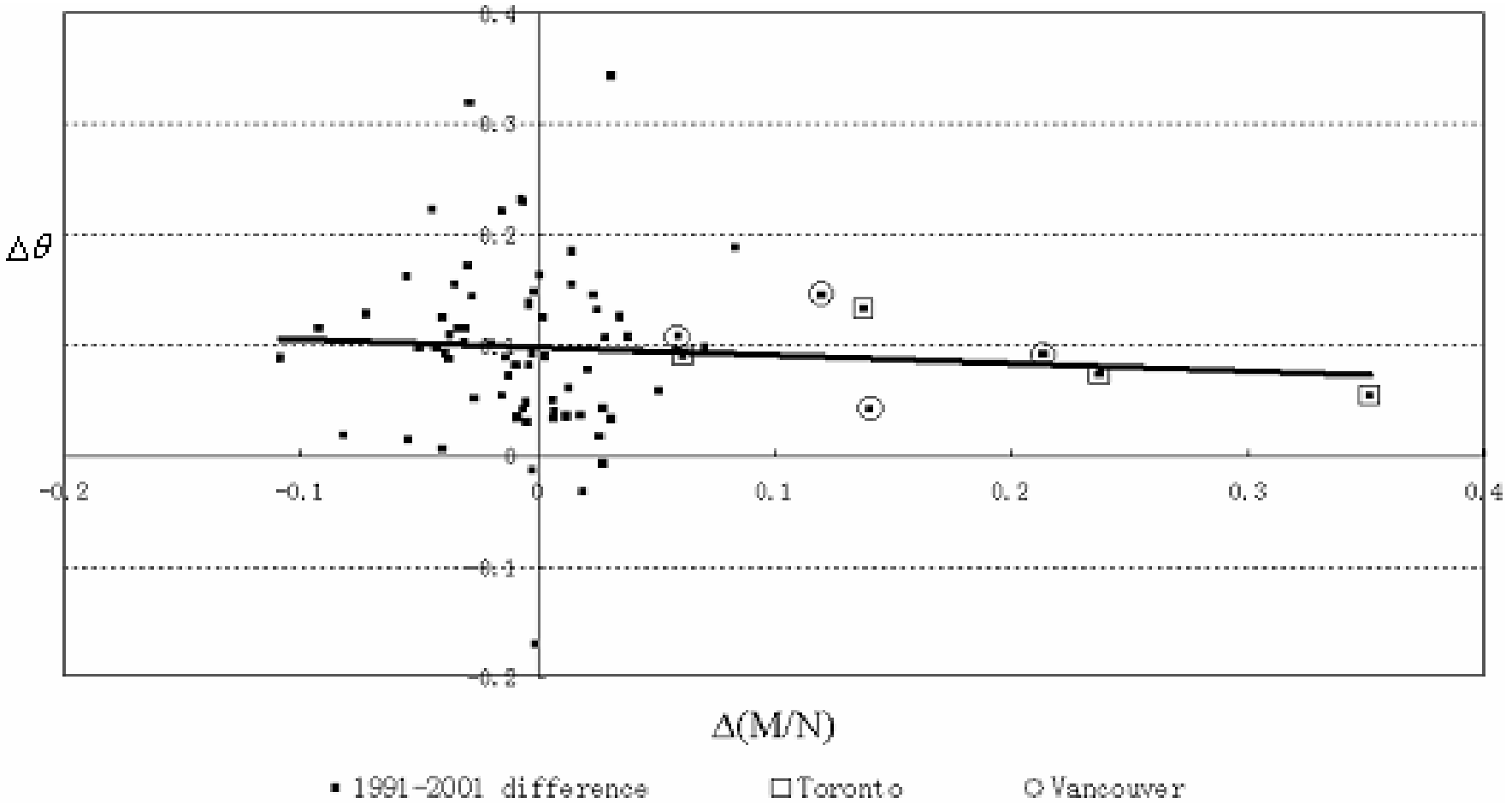

Table 4. OLS Estimates of γ, Two-Stage Regressions over Education-CMA Sub-Markets

	(1)	(2)	(3)	(4)
	No control	Area	Education	Area + Education
Census 1991-1996	0.207	0.007	0.293	0.129
	(0.160)	*(0.191)*	*(0.166)*	*(0.204)*
Census 1996 - 2001	-0.075	-0.182	-0.119	-0.327
	(0.143)	*(0.197)*	*(0.150)*	*(0.218)*
Census 1991 - 2001	0.098	-0.158	0.099	-0.199
	(0.124)	*(0.183)*	*(0.125)*	*(0.187)*
1991-1996 and	0.071	-0.046	0.071	-0.053
1996-2002 pooled	*(0.106)*	*(0.137)*	*(0.107)*	*(0.139)*

Recall:

(2) $\Delta\theta = \boldsymbol{\gamma}\Delta\,(M/N) + \eta\Delta Y + SKILL + AREA + u$

Endogeneity of Immigrant Location Decision

- *Problem*: immigrants attracted to cities with a booming economy and high earnings
  - immigrant density depends on the equilibrium wages
  - OLS estimates biased upwards

- *Solution*: an instrumental variable (IV) = the existing immigrant-native ratio $(M/N)_{t-1}$

  - New entrants tend to live in areas where there is a large stock of immigrants with the same ethnicity

Table 5. IV Estimates of Two-Stage Regressions over Education-CMA Sub-Markets

	(1)	(2)	(3)	(4)
	No control	Area	Education	Area + Education
Census 1991-1996	0.804	0.304	0.798	0.100
	(0.343)#*	*(0.679)*	*(0.335)**	*(0.700)*
Census 1996 - 2001	0.541	0.190	0.543	0.264
	(0.339)#*	*(1.479)*	*(0.348)#*	*(0.943)*
Census 1991 - 2001	0.707	0.555	0.700	0.061
	(0.232)#*	*(0.993)*	*(0.233)*#*	*(1.759)*
1991-1996 and	0.660	0.144	0.667	1.830
1996-2002 pooled	*(0.236)**	*(2.275)*	*(0.241)**	*(11.967)*

Sensitivity Tests

- Divide the labour market by
  - Occupation & CMA:
    OLS: insignificantly negative
    IV: insignificantly negative or nearly zero

  - Education & Province:
    OLS: insignificant
    IV: insignificantly negative or significantly positive

  - Education & Occupation
    OLS: insignificant
    IV: vary in sign, mostly positive

Conclusion

- Analysis of the impact of immigration on native-born wage growth using a two-stage regression method;
- Empirical results indicate that the increasing immigrant inflows did not adversely affect native wage growth rates;
- Results are robust to different categorization of sub-labour markets.